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a plurality of slave control units each of which is installed upon a respective carriage or wagon and is connected, in the respective carriage or wagon, to both said transmission lines, to solenoid valve units associated with pneumatic brake actuators and to sensor devices associated with the respective carriage or wagon;

the main control unit and the slave control units being arranged to communicate with one another via said transmission lines according to a predetermined serial protocol;

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the main control unit being arranged to transmit to the slave control units serial brake control signals, and to receive and acquire serial information or status signals from said slave control units via at least one of said transmission lines.

13. (Amended) The system according to Claim 12 further comprising at least one auxiliary engine;

said at least one auxiliary engine being also provided with a control unit capable of acting as a slave control unit connected to said transmission lines and arranged to receive synchronization signals coming from the control unit of the lead engine and to transmit information or status signals to the main control unit of the at least one main engine via at least one of said transmission lines.

14. (Amended) The system according to Claim 12, wherein the main control unit is arranged to transmit brake control signals to the slave control units via one of said transmission lines and to receive information signals coming from said slave control units via the other of said transmission lines.

15. (Amended) The system according to Claim 12, wherein the main control unit is arranged to detect and determine the location along the train of a position of a failure of one of said transmission lines.

16. (Amended) The system according to Claim 15, wherein the main control unit is arranged, in case of a failure of one of said transmission lines, to transmit at least the brake control signals and possible synchronization signals for one or more auxiliary engines on the other of said transmission lines.

17. (Amended) The system according to Claim 12, wherein the slave control units are arranged to acquire and transmit brake control or information signals on one or the other transmission line equally, and are moreover operable, when the slave control units receive a brake control signal, to transfer to the other transmission line brake control or information signals received on one line; the main control unit being arranged to detect a condition in which said transmission lines are both interrupted, each between different pairs of slave control units, and provide a transfer command signal to send brake control signals to at least two slave control units from among those in which there is an interruption of one of said transmission lines, in such a way that all the slave control units are able to communicate with the main control unit via a provisional transmission line comprising portions of both said transmission lines and the slave control units which have been sent said brake control signals.

18. (Amended) The system according to Claim 17, wherein said transmission lines are further connected to electrical power supply devices which can be activated in at least one engine to distribute power to the slave control unit.

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19. (Amended) The system according to Claim 17, wherein the slave control units are arranged to allow the passage of electrical power from one transmission line to the other which are connected, when the slave control units receive said transfer command signal, in such a way that when both said transmission lines are interrupted, each between different pairs of slave control units, all said slave control units can be supplied with electrical power propagated through said provisional transmission line.

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21. (Amended) The system according to Claim 12, wherein the system operates in trains comprising one or more carriages or wagons provided with a single transmission line.
